

1902

HURA VOOD or POSSUMWOOD

"Rakuda"

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HURA VOOD or POSSUMWOOD

"Rakuda"

Hura crepitans L.

Hura polyandra Baill.

Family: Euphorbiaceae

U. S. DEPOSITORY

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Common Names

| | |
|---------------------------------------|---|
| Acuapa.....Colombia | Javarillo.....Puerto Rico |
| Acupar.....Colombia | Javillo or (a).....Cuba, Puerto Rico, |
| Arbol del diablo....Mexico | Dominican Republic, |
| Arenillo.....Colombia | Venezuela |
| Arenillero.....Colombia | Milnillo.....Puerto Rico |
| Assacu.....Brazil | Mil-pesos.....Colombia |
| Bois du diable.....French West Indies | Monkey's dinnerbell...British West Indies |
| Castaneto.....Colombia | Mune.....Panama |
| Catahua.....Peru | Ochoho.....Bolivia |
| Ceiba amarilla.....Colombia | Ovillo.....Mexico |
| Ceiba blanca.....Colombia, | Papita de San Ignacio.Mexico |
| Venezuela | Pet du diable.....French West Indies |
| Ceiba habillo.....Venezuela | Possentrie (Poison |
| Ceiba de leche.....Colombia, | tree)....Surinam |
| Venezuela | Postentrie.....Surinam |
| Ceiba de lechasa....Colombia, | Possumwood.....U. S. trade |
| Venezuela | Quauhtlatlatzin.....Mexico |
| Ceibo.....Colombia, | Quauhayohuatli.....Mexico |
| Venezuela | Rakuda.....U. S. trade |
| Haba.....Cuba, Mexico | Sablier.....Haiti, French West |
| Haba de indio.....Mexico | Indies |
| Haba de San Ignacio.Mexico | Salvadera.....Cuba, Colombia, |
| Haba de Guatemala...Mexico | Peru |
| Habillo or (a).....Cuba, Mexico, | Sandbox tree.....British West Indies |
| Colomiba, Peru, | Seda blanca.....Dominican Republic |
| Venezuela | Solimanche.....Mexico |
| Havillo.....Mexico | Tatereta.....Guatemala |
| Hura wood... ..U. S. trade | Tronador.....Panama |
| Jabillo or (a).....Mexico, Central | Uassacu.....Brasil |
| America,Venezuela | |

Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

Distribution and Habitat

Two closely related species of Hura occur as large trees from the West Indies and southern Mexico to northern Brazil. The Mexican species (H. polyandra Brail.) differs little from the more widely distributed Hura wood (H. crepitans L.) (17).² The best growth is reported to be on the low narrow reefs of the coastal plain near Paramaribo, Surinam, where nearly pure stands, yielding 6,000 to 100,000 board feet per acre and averaging 25,000 board feet per acre over an area of 20,000 acres, are found.

In Colombia, it is common along the tributaries of the Magdalena River, especially in the region about El Banco. In Venezuela, it is found along the banks of streams and in the moist valleys of the coast range and is cut along the shores of Lake Maracaibo.

The Tree

The trees growing in the open may have relatively short, thick trunks, but in the forest they may attain heights of 90 to 130 feet or even as high as 200 feet. The forest trees have straight, fairly regular trunks often free of branches for from 40 to 100 feet and commonly 3 to 5 feet or sometimes 6 to 9 feet in diameter above the rather small buttresses.

These trees often have sharp spines on branches and trunk. They are reported to be associated with workmen's poisoning. The trees are extensively cultivated for shade and decorative purposes in the tropics of both hemispheres.

Bark

The bark is thick and rather smooth except near the base of the tree where it is covered with the short conical spines mentioned (11). It contains a caustic latex that spatters when a tree is cut. This latex is irritating to the eyes and skin and is poisonous if taken internally. It is sometimes used for stupifying fish (16) and also has been used as a remedy for elephantiasis and leprosy.

Leaves

The leaves resemble those of cottonwood.

Flowers and Fruit

The flowers are dark red and borne in the form of a cone.

The structure of the stamens is used in distinguishing species.

The fruits resemble little pumpkins (sandbox) and explode on drying, scattering wafer-like seeds which contain 50 percent of oil and are used to poison animals.

²Underlined numbers in parentheses refer to the list of numbered references at the end of the article.

General Appearance

The wood superficially resembles Simaruba, but lacks the bitter taste.

Color

The wood varies in color from a lustrous creamy white to light buff when fresh, occasionally with indistinct purplish or greenish streaks. When dry, it may appear yellowish brown or pale olive gray.

Weight

The wood is moderately light, comparable to yellow-poplar; specific gravity 0.38 (0.31 - 0.51) based on oven-dry weight and green volume or a weight of about 40 pounds per cubic foot green and 28 pounds air-dry (11).

Texture, Grain, and Figure

The wood is rated as fine to medium textured. It cuts with a more or less woolly surface. Some has an attractive "roe" grain or ribbon stripe on the radial surface, although the figure is usually not pronounced except in crotches. The grain is generally interlocked but may be straight (11).

Luster

Luster is rated as high (11).

Odor and Taste

Odor and taste are lacking (11).

Working Qualities

Although somewhat difficult to saw when green because of the extreme fuzziness of the cut surface, the wood can be readily machined when dry. Lack of clean cutting and chipped and torn grain are frequently encountered with material which has extremely interlocked grain. The wood takes stains well and glues readily (11).

Mechanical Properties (11)

The following data in table 1 were obtained in recent tests conducted at Yale School of Forestry in cooperation with the Office of Naval Research and the Bureau of Ships, U. S. Navy Department, under Contract N6 ori-44 Task Order XV (Project Designation No. NR-033-C20) and published in Tropical Woods No. 97, Rev. 1, 1950, page 74. Comparative data for yellow-poplar obtained at the Forest Products Laboratory are also included.

Compared with species of like density, possumwood is above average in all static-bending properties except stiffness in which it is slightly below average. It is average in hardness, toughness, and resistance to crushing

Table 1.--Comparison of mechanical properties of possumwood and yellow-poplar (11)

| Species | Source | Number of logs | Moisture content | Specific gravity | Static bending | | | | |
|----------------------------|---------------|----------------|------------------|------------------|----------------|----------|----------|----------------|---------------------|
| | | | | | Percent | P. s. i. | P. s. i. | 1,000 P. s. i. | In.-lb. per cu. in. |
| Possumwood | Panama | 3 | 64.7 | 0.42 | 3,630 | 6,320 | 1,030 | 0.70 | 6.4 |
| (Hura crepitans) | Venezuela | 3 | 60.9 | .42 | 3,650 | 5,670 | 950 | .88 | 7.5 |
| | Surinam | 1 | 76.0 | .40 | 4,500 | 6,940 | 1,140 | 1.08 | 5.7 |
| | Average | 7 | 67.2 | .41 | 3,930 | 6,310 | 1,040 | .89 | 6.5 |
| Yellow-poplar ¹ | | | | | | | | | |
| (Liriodendron tulipifera) | United States | | 64 | .43 | 3,400 | 5,400 | 1,090 | .62 | 5.4 |

| Species | Source | Compression parallel to grain | Hardness: Compression | Tension: Shear | Cleavage: Toughness | | | | | |
|----------------------------|-----------|--------------------------------|-----------------------|-----------------|---------------------|-----|-----|-----|-----|-------|
| | | ----- | perpen- | perpen- | | | | | | |
| | | Fiber stress: Maximum | dicular | dicular | | | | | | |
| | | at propor-: crushing: of elas- | to grain | to | | | | | | |
| | | tional limit: strength: ticity | ----- | grain | | | | | | |
| | | | End: Side: Stress at | | | | | | | |
| | | | proportion- | | | | | | | |
| | | | al limit | | | | | | | |
| | | <u>P. s. i.</u> | <u>P. s. i.</u> | <u>P. s. i.</u> | <u>lb. per</u> | | | | | |
| | | <u>1,000</u> | <u>lb.</u> | <u>lb.</u> | <u>in. of</u> | | | | | |
| | | <u>p. s. i.</u> | | | <u>width</u> | | | | | |
| | | | | | <u>specimen</u> | | | | | |
| Possumwood | Panama | 1,410 | 2,430 | 1,090 | 440 | 410 | 330 | 870 | 207 | 78.6 |
| (Hura | Venezuela | 1,900 | 2,670 | 1,170 | 460 | 390 | 400 | 730 | 210 | 75.4 |
| crepitans) | Surinam | 2,580 | 3,270 | 1,240 | 590 | 500 | 460 | 880 | 480 | 57.1 |
| | Average | 1,960 | 2,790 | 1,170 | 520 | 440 | 420 | 830 | 300 | 70.4 |
| Yellow-poplar ¹ | | | | | | | | | | |
| (Liriodendron | United | 1,930 | 2,420 | | 390 | 340 | 330 | 450 | 740 | 220 |
| tulipifera) | States | | | | | | | | | |

¹U. S. Dept. Agr. Tech. Bul. 479.

and modulus of elasticity as determined by compression parallel to the grain; above average in shear, cleavage, and compression and tension perpendicular to the grain, and, below average in stress at proportional limit in compression parallel to the grain.

In the tabulation it is compared with yellow-poplar which is of similar density. The two species are much alike in all measured mechanical properties, with possumwood being slightly superior to yellow-poplar in all but stiffness as determined by bending.

Seasoning

Possumwood can be air dried at a fast rate without undue warping and checking. Early rapid drying tends to forestall the development of mold and stain which form rapidly on green material in warm weather.

As indicated in table 2, volumetric shrinkage of possumwood is low, 7.3 percent, which compares favorably with mahogany, 7.7 percent, and white pine, 8.2 percent. The difference between shrinkage radially of 2.7 percent and tangentially of 4.5 percent is moderate, indicating rather uniform shrinkage in these two directions. Longitudinal shrinkage of 0.48 percent does not exceed the limit of variation to be expected of wood characterized by interlocked grain.

Table 2

| Species | Source | Shrinkage | | | |
|---|-----------------|-----------|------------|--------------|------------|
| | | Radial | Tangential | Longitudinal | Volumetric |
| | | Percent | Percent | Percent | Percent |
| Possumwood (<u>Hura crepitans</u>) | Panama | 2.5 | 4.6 | 0.26 | 6.4 |
| | Venezuela | 2.8 | 4.6 | .77 | 7.5 |
| | Surinam | 2.7 | 4.4 | .42 | 8.0 |
| | Average | 2.7 | 4.5 | .48 | 7.3 |
| Mahogany (<u>Swietenia macrophylla</u>) | Central America | 3.5 | 4.8 | --- | 7.7 |
| | | | | | |
| White pine (<u>Pinus strobus</u>) | United States | 2.3 | 6.0 | --- | 8.2 |
| | | | | | |

Durability

Possumwood has been found to be fairly resistant to fungi and susceptible to damage by termites (4, 27). Tests conducted at Yale (11), showed the wood to have resistance to decay by a white-rot and a brown-rot fungus ranging from nondurable to durable. Tests conducted by the Navy (1) on water absorption and weathering indicate that this wood compares favorably in both respects with Philippine and Central American mahogany. The tests at Yale (11), however, showed possumwood as being somewhat inferior to Central American mahogany in resistance to water absorption.

Uses

The wood is used locally for common lumber for interior construction and carpentry and in making dugout canoes, boxes and crates, and veneers and plywood. In Mexico, it is sometimes used for telegraph poles. It is considered too light and soft to withstand marring for use as a preferred cabinet wood. It rates as a cheap substitute for Spanish cedar (Cedrela). Since possumwood takes glue well, it could probably be used for corestock, utility and face veneer, and millwork.

Commercial Aspects

An effort to introduce this wood into the American market under the name "Rakuda" was made by W. L. Kann, Pittsburgh, Pa., beginning about 1923 (17).

Anatomical Structure (19)

Growth rings are indistinct to distinct.

Pores vary from small to rather large in different specimens and are not very numerous. Vessel ends have simple perforations.

Tyloses are fairly abundant, and light-colored gum deposits are common.

Rays are uniseriate or locally biseriate, mostly less than 20 cells high, and nearly homogeneous.

Ripple marks are generally absent.

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